

(For JSPS Fellow)

Form B-5

Date (日付)

16/11/2015 (Date/Month/Year: 日/月/年)

Activity Report -Science Dialogue Program-

(サイエンス・ダイアログ事業 実施報告書)

- Fellow's name (講師氏名): Joachimczak Michal Jakub _____ (ID No. P14349)

- Participating school (学校名): Niigata Prefectural Takada High School

- Date (実施日時): 10/11/2015 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) Living Artificial Life

(in Japanese) 人工生命の世界

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

Other than the introduction of myself, my country and the reasons I went into science, I have introduced students to basic concepts related to my research field (artificial life/evolutionary robotics): how complexity in natural world often emerges from simplicity. This included examples of phenomena such as fractals, animal flocking, seashell patterns or dendritic crystal growth with an explanation of actually very simple processes that underlie them. I have then introduced them to the concept of evolutionary process being capable to occur not only in the biological world, but also in other domains, such as in fashion or musical styles and ultimately, how the evolution can occur in a computer. Then I introduced examples of systems that simulate evolutionary processes inside computers (including mine and Ito-san's work) in order to teach students that we can use simulated evolutionary process as a method of automatic design (e.g. of robots). Finally, we performed an experiment in which attempted to combine the power of human creativity with creativity of evolutionary process. Students were asked to sketch designs for imaginary, soft-robots and we used software (that I have developed within my JSPS project) to evolve gaits for their creations, effectively bringing their drawings to life. This required running evolutionary algorithm on a cluster at Nagoya University, to which we connected over Internet. I will provide examples of students' creations and the effects of evolution together with my slides (as drawings and Youtube videos).

- Language used (使用言語): English, with some crucial and more difficult sections repeated in Japanese by Ito-san

- Lecture format (講演形式):

◆Lecture time (講演時間) 105 min (分), Q&A time (質疑応答時間) 15 min (分)

◆Lecture style (ex.: used projector, conducted experiments)

(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))

Projector for slides, experiments performed by first drawing designs on iPads and then running evolutionary algorithm on the computer cluster in Nagoya University.

◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

assistance by accompanied person _____

◆Name and title of accompanied person (同行者 職・氏名)

Mr. Ito Takashi, PhD student at Graduate School of Information Science, Nagoya University

◆Other noteworthy information (その他特筆すべき事項):

- Impressions and opinions from accompanied person (同行者の方から、本事業に対する意見・感想等がありましたら、お願いいたします。):